

BENGALURU CITY UNIVERSITY

Second Semester (NEP) Open Elective Commercial Mathematics Question Bank

Unit I : Set Theory

Three marks questions

1. Define (i) Set (ii) Subset. Give an example for each
2. Define (i) Super set (ii) Power set (iii) Null set.
3. Define finite and infinite set. Give an example for each.
4. Define Union of a set and intersection of a set. Give an example for each.
5. Define Symmetric difference and Difference between two sets. Give an example for difference between two sets.
6. Define Venn diagram. Represent a Venn diagram for $A \cup B$ and $A \cap B$.
7. Convert the following sets from Roster form to Rule form.
 - (i) $A = \{5, 10, 15, 20, 25, \dots, 50\}$
 - (ii) $B = \{a, e, i, o, u\}$
 - (iii) $C = \{2, 3, 5, 7, 11, 13, 17, 19, 23\}$
8. Convert the following sets from Rule form to Roster form,
 - (i) $A = \{x: x \text{ is a prime number} < 20\}$
 - (ii) $B = \{x: x \text{ is a positive factor of } 25\}$
 - (iii) $C = \{x: x \text{ is a letter in the word "MATHEMATICS"}\}$
9. Write all possible subsets of the following,
 - (i) $A = \{1, 2, 3\}$
 - (ii) $B = \{a, b\}$
 - (iii) $C = \{2, 3, 5\}$
10. If $A = \{5, 6, 7\}$ find $P(A)$.
11. If A has 5 elements, how many elements will $P(A)$ have?
12. If $A = \{2, 3, 4\}$ Write all the proper subsets of A .
13. If $A = \{a, b, c\}$, $B = \{c, d\}$ then find
 - (i) $A \times B$
 - (ii) $B \times A$
 - (iii) $A \times A$.
14. If $A = \{1, 2\}$, $B = \{2, 3\}$, $C = \{3, 4\}$ Then find
 - (i) $A \times (B \cup C)$
 - (ii) $A \times (B \cap C)$
 - (iii) $(A \times B) \cup (A \times C)$
15. If $A = \{a, b, c\}$, $B = \{d\}$, $C = \{e\}$ Verify $A \times (B - C) = (A \times B) - (A \times C)$
16. If $A = \{c, e, f\}$, $B = \{f, g, h\}$, $C = \{g, h, i\}$ Find $(A \cap B) \times (B \cap C)$.
17. Define (i) Relation (ii) Domain and (iii) Range of a relation.
18. Define (i) Identity Relation (ii) Null Relation (iii) Universal Relation.